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# DEPARTMENT OF PUBLIC HEALTH NURSING

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## MODERN FACTS AND PHASES OF TUBERCULOSIS<sup>1</sup>

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WHY should tuberculosis, any more than measles, or diabetes or anaemia or nephritis, be discussed in this convention of nurses? Ten years ago, or more, such a question might have been asked. At that time tuberculosis seemed to us a disease of the individual, as the others are; a disease of the lungs, bones, or intestines; a widespread, almost universal disease, but yet with individual pathology, individual etiology, individual treatment. Today tuberculosis seems to us not so much a disease of the individual as of the community; affecting not so much Smith, Jones and Brown, as Smithville, Jonestown and Brownburg; having a community pathology, a community etiology, and needing community diagnosis and community treatment. It is a seamy side of the complicated fabric we call our civilization.

It is discussed in this convention not so much that nurses may know more of the signs and symptoms, the pulse and temperature, the daily round and routine of a tuberculous patient; but chiefly that nurses, as forwardlooking workers for human betterment, should see more clearly, in its many aspects, this age-old community phenomenon, Tuberculosis.

*Wastage of Life.*—Of what wastage

of human life and strength can it be held guilty?

Tuberculosis has been compared with war, but the two are scarcely comparable. War is occasional and sporadic, but this pestilence is constant and universal. War observes armistice and truce and treaty, bringing peace between man and man; but down all the ages, there has been no release from this other war. While fifty thousand Canadians died nobly in a great cause overseas, fifty thousand Canadians died uselessly and wastefully of tuberculosis at home. Much the same was true in varying proportions of all allies and enemies in the Great War, and now, though the wastage of the war has almost stopped, the wastage of disease goes on. Truly if war has slain its thousands this Captain of the Men of Death has slain his hundreds of thousands.

In more favored communities, such as those of the western half of this continent, one death in twelve is from tuberculosis. In less favored communities, such as those of Central Europe, parts of South America, parts of India, the Philippines, or some sections of Canada and the United States, one death in every eight, one in every six, or even one in four, is from tuberculosis. Throughout the whole world, one grave of every eight graves is dug for a man

<sup>1</sup> Paper read at the convention in Seattle, June 28.

or woman or child who has died of this disease.

*Moloch of an Imperfect Civilization.*—With incredible infatuation, early peoples, voluntarily, threw their children, especially their first-born, into the fiery arms of Moloch, the Sun God. We of this later age are compelled to offer up lives dear to us, as unholy and unavailing sacrifices to this Moloch of an imperfect civilization, tuberculosis. In favored communities, such as those of the western half of this continent, each thousand people, each year, thus gives up one life. In England and Wales each group of seven hundred and fifty must make such yearly sacrifice. In the United States, out of each seven hundred people, one such victim must be snatched. Among the negroes of the United States, one out of every group of two hundred and sixty is sacrificed, and, in some parts of India, from each little group of one hundred and forty people, one each year must be taken. Victims for this sacrifice are men and women, youths and maidens, children at the breast, and even the aged and life-weary; but chiefly men and women at the very zenith and meridian of life, at the very height of productiveness, usefulness, responsibility and enjoyment. Even in favored communities, one death in four, during mid-adult life is from tuberculosis, and in some less favored communities, even one in two, at this noon-day time.

Young Americans or Canadians, at the age of twenty-one, on the very threshold of their lives, may expect an average of forty-three and a half years of life; that is, they may expect to live to a little beyond sixty-four. If tuberculosis could be left out of the calcula-

tion, while all other elements remained the same, they could expect, at twenty-one, not forty-three and a half years of life, but forty-six; could expect to live not to sixty-four only, but to sixty-seven. Beyond twenty-one, then, the average of life is shortened two and a half years by tuberculosis. One thousand young people in an average community lose two thousand five hundred years of life and work from this cause. Fifty-seven average life periods are lost, out of each one thousand. Truly this is a destruction that wasteth at noon-day.

*Not the killed only, but the wounded also.*—And this is not all of the toll it levies. The bodies that lie buried on the battle fields are not the whole wastage of war. There are the wounded and the maimed as well, whose life flows on, but in feebler streams to the end. Tuberculosis not only kills, but maims. Three cripples out of every four, apart from accident or war, are deformed by its ravages. And there are those as well in countless thousands who are crippled not in limb, but in life itself, in health, vigor, usefulness, enjoyment. Life has breadth and depth as well as length, and of all those whose lives are narrowed and enfeebled by any physical agency, one third, perhaps, to make the estimate low, are crippled by this one disease. To countless thousands, their life-long handicap, their perpetual menace, the skeleton at their feasting, the sombre background, giving a cast of tragedy to the whole of life, is tuberculosis.

The wastage of tuberculosis, as the wastage of war, can be told not in deaths only, but in dollars. Impaired efficiency as symptoms develop, long

periods of illness when work cannot be done and when care is needed, life cut off in mid-career, disorganization and disarrangement in families and communities, all go to make up an economic loss greater than that of war, and spent to no purpose, but wasted wholly. If all the economic leaks and wastages due to weakening, disease and death from tuberculosis were stopped, the savings effected, if they could be so applied, would pay the stupendous war debts of the whole world in two generations.

*Lying Latent.*—Beyond deaths and crippling and money loss, tuberculosis, like the law, hath yet another hold upon us. It lies latent, ready to be stirred into activity, in practically the whole human family at mid-life or beyond, and in varying proportions in the earlier years.

In the crowded cities of old lands the tuberculin test shows latent disease in twenty per cent of children at the age of two, and in nearly ninety per cent at fifteen. In Framingham, Mass., about half the children were infected at seven. Even in the western Canadian prairie province of Saskatchewan a particularly good survey made last year, covering one per cent of the children of the province, showed forty-four per cent infected at six, and sixty-one per cent at fourteen. Of two hundred and twenty-six young adults in training as teachers, seventy-six per cent, by reacting to tuberculin, showed latent tuberculosis. Compared with this seventy-six per cent infection by tuberculosis, only fifty-four per cent gave a history of measles. Forty per cent more had met with tuberculosis than with measles. I have little doubt that in this city and

in this audience, or in almost any other city or any other audience, more have been infected by tuberculosis than by measles, and as many by tuberculosis as by influenza. Six per cent of the young adults had a history of pleurisy, and of all examined, the children and the young adults, about one per cent were found to have disease that could be called active.

More and more we think of tuberculosis as a universal disease; universal not only in the sense that it is found in all countries, among all classes, and under all conditions, but universal in a wider sense in that it becomes implanted at some time and to some degree in practically every individual. Childhood is the usual time of implantation, the seed time; adult life is usually the time of breakdown, the harvest. There are probably few children at the age of leaving school who have entirely escaped tuberculosis infection, and few adults, if any, in whom the seeds and roots are not lying latent.

*Activity.*—What are the results in actual disease, of this almost universal infection?

Of ten thus infected, seven will pass through life without noticeable illness or handicap; two will have evident disease, but will recover with some handicap; one will have gross disease and will not recover. Tuberculosis is one of the oldest and worst of the noxious weeds growing in human soil. It is seeded and rooted everywhere. The whole world over, it chokes out the human life-crop and kills it, in one field out of every eight or ten. Besides this, it cuts down the yield in work and happiness, very much in many fields, and a little in almost all.

It does seem strange, does it not, that even yet nurses are sent out, and indeed doctors also, presumed to have training in the care of the sick, with no practical knowledge, and very little theoretical knowledge, of a disease which kills in more favored countries one citizen in ten, and in less favored countries one in four, which weakens many others, lies latent in practically the whole population, and so hovers as a menace behind all ills and ailments, weaknesses and accidents?

*The Seed.*—What are the causes of this phenomenon, widespread throughout the world, taking toll in all races and of all ages?

I have said that tuberculosis is a noxious weed in human soil. Roughly, weeds have two causes. They grow from seeds, and if there are no seeds there will be no weeds. But a soil is needed as well, and this is given them by bad farming, and denied them by good farming. A farm well tilled brings forth good grain, some forty, some sixty, and some an hundred fold. A farm badly tilled grows up rank with weeds which choke out the good grain. So, the causes of tuberculosis are two: first, seeds,—germs, bacilli of tuberculosis; second, bad human husbandry,—bad living, bad environment.

Tuberculosis seeds are chiefly of two kinds, the human and the bovine. Bovine infection comes chiefly from milk, not necessarily milk from a tuberculous cow. It may be milk soiled in a stable in which there are tuberculous cows. In some cities one sample of milk in fifteen or twenty show bacilli. It infects children, chiefly, and manifests itself usually in bone, joint and gland disease, peritonitis, etc. In Eng-

land it accounts for about one-fourth to one-half of all tuberculous disease and six per cent of tuberculosis deaths. There is, perhaps, a silver lining to the cloud in that the milder bovine infection may serve as a vaccination against the more virulent human infection. But that should not for one moment relieve the sentence passed upon the tuberculous cow.

The human tubercle bacillus leaves the body chiefly by mouth or intestine. The careless uncovered cough or sneeze, the careless expectoration, contaminated fingers, perhaps dishes, also, are the chief means of spread. I believe the spread from those who know they have the disease is inconsiderable, and that the chief spread is from those who do not know they carry infection. So we must not only keep after the known tuberculous cougher and sneezer and spitter; but chiefly after average, ordinary, and everyday cougher and sneezer and spitter, the average and ordinary dirty person.

It's about time that civilization stopped careless spitting. It will be stopped, not by the force of law, but by the greater force of imagination. Get people to picture what really happens. The foul excretions from Mr. Careless Spitter's diseased respiratory tract, deposited on Main Street sidewalk at three p. m., are tramped into a west end apartment at four, gathered up from an otherwise clean floor by the pink hand of a creeping baby at five, and have implanted a life-long disease in the body of the little child before six. Of all common carriers, the commonest is the shoe sole. Spitting will go when people use their imaginations, and cultivate a new and a strong disgust at

contamination from any bodily excretions.

*Infection.*—But while tuberculosis is a germ disease, well-informed nurses know, and all nurses ought to know, that it is in a class quite by itself. It is *so* infectious and *so* widespread that we can't grow up without infection, and once infected, once carrying a latent and invisible focus, we are not very infectable. Re-infection and super-infection are possible, as second attacks of measles are possible, but they are likewise rare. Re-infection likely takes place, if at all, only under very unfavorable conditions.

Once in a very long time a nurse does ask as to the danger of nursing tuberculous cases. Fortunately it is negligible. Certainly the danger is at its least in the nursing of the openly and admittedly tuberculous on a proper tuberculosis routine; and it is at its greatest in general nursing where tuberculosis is an often unrecognized background of many and varied disease conditions.

I am at a loss to think just what a nurse could do who was determined in no way to deal with tuberculosis. What proportion of the ordinary run of cases in any general hospital are essentially tuberculous? What of the bones, the joints and the sinuses, the kidney, the bladder and the peritoneum? What of meningitis, of pleurisy, of empyema? Tuberculosis of the intestine is a common disease. Even a housemaid's knee may tend to joint tuberculosis, and the apple of the surgeon's eye, the vermiform appendix, be the center of tuberculous disease. In the presence of disease of any kind or degree, after operations, anaesthetics, or even childbirths,

there is special danger of the awakening of latent tuberculous disease.

The freedom of sanatorium staffs from breakdown through tuberculosis is remarkable. In a very considerable experience I do not know of one case in which a nurse or other employee has come to harm through work in a well-regulated sanatorium.

*The Soil.*—I would be greatly disappointed if I should fail in impressing this upon you, that with weeds, and with tuberculosis also, the seed is of lesser importance, and bad farming or bad living of chief importance.

When we hear of one who has developed active tuberculous disease, if we know the ways of the disease we do not ask, "Where did he catch it?" for he likely "caught it" in childhood, perhaps twenty years ago; but we do ask, "How was his resistance lowered so that the disease *caught him*?" The onset of open disease usually does not mean new infection; it means breakdown, health bankruptcy. It is not due to any recent accidental meeting with a germ, but to over-strain, over-fatigue, dissipation, neglect, bad environment, in short, to bad farming, which gave to the long latent germ a prepared soil in which to grow.

(*To be continued*)

In the prevention of fatigue there is a great field for nurses. Perhaps no other group of health workers has had such vast practice in observing individuals and the symptoms of their reaction to disease and to the curative measures applied to it. Almost any graduate nurse may be counted on to notice symptoms of approaching ill-health and to attribute them to some disturbance of the bodily functions, where perhaps nobody else would notice or think about them at all. She sees, hears, and senses much more delicately and accurately than even the physician. Above all other things, this is her special job in the world.—*FATIGUE. Public Health Nurses' Bulletin*, New York State Department of Health.